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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/590,646	06/08/2000	Vernon M. Williams	4210US (99-0173)	1022

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EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

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10/30/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/590,646	Applicant(s) WILLIAMS ET AL.	
	Examiner JAMES M. MITCHELL	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-69 and 142-207 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-21, 47-69 and 142-207 is/are allowed.
- 6) ☒ Claim(s) 22-29, 31, 33-37, 39 and 44 is/are rejected.
- 7) ☒ Claim(s) 30, 32, 38, 40-43, 45 and 46 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to applicant's amendment filed June 23, 2008.

Election/Restrictions

2. Claim 3, 9, 32, 38, 50 and 54 are directed to an allowable product in its parent claim. Hence these claims previously withdrawn from consideration as a result of a restriction requirement, are hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 23 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "said substrate" is applicable to two different substrates, a first and second. As such, it is ambiguous as to which substrate is modified.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. Claims 22-24, 26-31, 33-37, 39 and 44 are rejected under 35

U.S.C. 102(b) as being anticipated by Subrahmanyam et al. (U.S. 5,411,400).

7. Subrahmanyam (Fig. 1, 8, 9) discloses:

(cl. 22) A semiconductor device component, comprising: a substrate (22) having at least one contact pad (23) exposed at a surface thereof;

a first member (34) of an alignment structure (39,34,29,27,26) secured directly (e.g. ring not moving, electroplated and sputtered) and protruding from said at least one contact pad (e.g. extends above), said first member including an aperture (e.g. space taken by 32) through the length thereof, said first member being configured complementarily to a second member (32) of said conductive structure secured to a corresponding contact pad (17) of another substrate (16) of another semiconductor device component; and a conductive center of first member (e.g. center portion of interior surface of ring 34 closest to opening), with said conductive center being laterally confined within at least a base (e.g. lower) portion of said aperture;

(cl. 23) a flip-chip type semiconductor device (e.g. active pad facing downward);

(cl. 24) said flip-chip type semiconductor device comprises a flip chip die (Title);

(cl. 26) said substrate comprises a chip-scale package (e.g. packaging includes interconnection);

(cl. 27) substrate (22) is an intermediate support and therefore a carrier;

(cl. 28) said first member (34) is configured to contain said conductive center (e.g. center of 34/ alternative center of 29 in aperture) over said at least one contact pad;

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(cl. 29, 35, 44) metal or metal alloy, conductive center substantially fills said aperture (e.g. alternately 29, fills/closes bottom/ base opening of ring, 34)¹;

(cl. 31) wherein said jacket of said male member has an end (e.g. tip of 37 closest to 29) portion with a smaller periphery than a lower portion of said jacket and therefore a base (e.g. wide portion of 37; See Fig. 1, top-down view)²;

(cl. 33, 39) the aperture tapers inwardly³ (aperture portion of 39; Fig. 8, 9);

(cl. 34) wherein said outer surface is tapered (e.g. portion of 37 next to 34) and like a cone so therefore frustoconical;

(cl. 36) where aperture is configured to receive at least an end of said second member (32; Fig. 9);

(cl. 37) wherein an upper portion (e.g. outermost portion of 39) of said aperture has a larger periphery than a base portion of said aperture (e.g. where 29 meets 34).

¹ Note the claim is broad and does not require that the entire aperture be substantially full. However, even if affirmatively claimed, a disclosure of a solid object would make a claim of a ring member surrounding a conductive center unpatentable. The difference amounts to merely how applicant has separated a known item (e.g. female/male member) into known parts (ring & conductive center). The simple arrangement of known parts to form a male or female member that functions generally in the same manner as that which is known in the art does give rise to the level of invention necessary for the grant of a patent as anticipated by *Hotchkiss v. Greenwood*, 11 How. 248 (1851) and followed by its progeny.

² Note if applicant amended the claim to recite a shape that overcame the prior art then the claim would still be unpatentable since applicant not disclosed the shape to be critical. Thus the selected shape would be found obvious, since it has been held that mere dimensional limitations are *prima facie* obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

³ Note, although shown in the prior art, even if the feature were not shown, they still would be considered obvious in light of any standard chip socket (e.g. *Kardon*, U.S. 5,418,471) since applicant has not disclosed that his claimed shapes are unobvious or otherwise critical. See M.P.E.P 2144.04[R-1]

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Subrahmanyam et al. (U.S. 5,411,400) in combination with Abe et al. (U.S. 5,646,442).

11. Subrahmanyam discloses the same invention as claimed in paragraphs 7 of this office action except that his chip package is cylindrical instead of a BGA, Abe (Fig. 2A, 4) shows that for a socket connection terminals that cylindrical terminals are equivalent to BGA structure known in the art. Therefore, because

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these two contact structures are art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute Ball type terminals for cylindrical ones.

Response to Arguments

16. Applicant's arguments filed January 14, 2008 have been fully considered but they are not persuasive regarding claim 22 and its dependents except for those indicated as including allowable subject matter. Applicant claims there is no disclosure of a protruding alignment element over a pad or the alignment element containing a conductive material over the pad. Examiner respectfully disagrees. The male figure is aligned with the female member that protrudes over a pad with a portion of the base of the aperture containing a conductor as disclosed above and shown in Figure 9. With respect to applicant's allegation that his male end is smaller than the cylindrical base, examiner respectfully disagrees. First the claim is not limited to the cylindrical portion, but rather the male member. Because any lower portion can subjectively be considered the base the claim is encompassed within the prior art.

Allowable Subject Matter

20. Claims 1-21, 30, 32, 38, 40-43, 45-69 and 142-207 are allowed.

21. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious either the male or female member comprising at least dielectric, an unconsolidated conductive material, photopolymer, thermoplastic conductive elastomer or that the first

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member with an aperture is received be an aperture in the second member including all the limitations of the independent claim.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art as exemplified in Scholz (U.S. 5,329,423), Dozier (U.S. 6,669,489) and Distefano (U.S. 6,007,349) discloses the use of compliant female members for removable or testing devices.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES M. MITCHELL whose telephone number is (571)272-1931. The examiner can normally be reached on M-F 8:00-4:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Zandra V. Smith/
Supervisory Patent Examiner, Art
Unit 2822

October 25, 2008
/James M. Mitchell/
Examiner, Art Unit 2813